

Good News: Contaminants Very Low in Alaska Fish

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With every report on contaminants in fish, people wonder if it is safe to eat fish. How can people determine whether mercury, dioxins, pesticide residues, or other substances are increasing their chance of developing cancer or something else? These are important questions that don't have simple answers, because the chance of developing a health problem from contaminants in foods depends on many factors. Frequently we don't have enough solid information to reasonably estimate health risk. However, recent data from the state of Alaska are encouraging. Environmental contaminants in Alaska fish are very low, particularly in salmon, cod, pollock, and other species.

From 2001 to 2002, the state of Alaska, in cooperation with other government agencies and fishing organizations, collected over 600 samples of Alaska fish species for detailed chemical analysis. These samples, analyzed with the most up-to-date methods, provide the most reliable estimates of environmental contaminants in Alaska fish.

Are All Fish Contaminated?

Fish accumulate chemicals from the environment because contaminants from pollution and waste incinerators wash into lakes and rivers, eventually reaching the ocean. Some degrade slowly and can spread around the world. Heavy metals such as mercury, pesticide residues, and other compounds move up the food chain from plankton to small fish and larger fish that eat smaller ones. For this reason, nearly all fish have traces of contaminants. However, only a few species and sizes of fish contain relatively large amounts. These include larger older fish, some carnivorous species that eat other fish, and fish from polluted waters. Some recreationally caught fish may have higher contaminant levels than Alaska fish and other commercially available fish. The good news is that, because the production of many harmful chemicals has ended, levels of many contaminants in fish have been slowly decreasing.

Which Contaminants Are Risky?

Not all contaminants pose a serious health risk and most people, including those who eat fish several times a week, consume only very small amounts. Increased levels of contaminants have been observed mainly in people who frequently eat fish known to have higher contaminant levels. To minimize intake of contaminants without sacrificing the health benefits of seafood, eat mostly fish known to be low in contaminants. Eating a variety of fish species reduces the risks from contaminants. The healthiest fish choices are those high in omega-3 fatty acids and low in contaminants, like Alaska salmon.

Mercury

The contaminant of greatest concern is mercury, found in fish as methylmercury. Mercury is a risk mainly for pregnant women and young children. Women of childbearing age who may become pregnant should also avoid eating fish with high mercury levels. Mercury can potentially damage the brain during fetal and infant development. For this reason, the Food and Drug Administration (FDA) advises pregnant and nursing women and young children to avoid eating shark, swordfish, tilefish, and king mackerel, which are high in mercury. For all other adults, small amounts of mercury from seafood have very little risk. High blood mercury levels may be linked to cardiovascular disease, but so far the data are inconclusive. In contrast, the cardiovascular benefits of eating seafood are well established. Eating a variety of fish, especially those known to be low in contaminants, protects health and minimizes risks.

Mercury is distributed throughout fish tissues, so removing the skin and draining the fat have little effect on mercury content. The maximum amount of mercury in seafood permitted by the FDA is one part/million (1 ppm). According to recent Alaska Dept. of Environmental Conservation data, all five species of Alaska salmon have less than one thirtieth of FDA's permitted level, averaging 0.027 ppm¹.

Alaska cod and pollock also have low levels, averaging 0.07 ppm, less than one tenth of FDA's permitted level. These species are among the lowest in mercury content in FDA's database of commercial fish species².

Organic Contaminants

Organic contaminants include mainly PCBs, dioxins, and various pesticide residues. These substances persist in the environment for years, degrading only slowly. Although manufacture of PCBs and several pesticides ended in the 1970s, these substances continue to be detected at low levels in many species of fish and other foods. Dioxins, chemically related to PCBs, enter the environment from activities such as waste incineration, forest fires, and volcanic eruptions. Environmental levels of PCBs and dioxins have been decreasing for the past 30 years.

Adverse health effects from PCBs and dioxins have occurred almost exclusively in industrial workers and children of mothers exposed to levels 100 to 1000 times above background^{3,4}. Although the Environmental Protection Agency (EPA) considers PCBs and dioxins probable carcinogens, the agency concluded that there was "no clear indication of increased disease in the general population attributable to dioxin-like compounds⁵." Current exposure through eating commercially available fish has not been associated with any health risks.

Although much publicity has been given to differences in the amounts of organic contaminants in wild and farmed fish from various parts of the world, all reported levels have been well below safe limits set by the FDA, EPA, and the World Health Organization. On balance, the health risks for people who do not eat fish are greater than for those who do.

Certain pesticide residues can be detected in the environment and at trace levels in some fatty fish, even though manufacture of 51 of the most harmful pesticides has been banned in the U.S. Alaska fish were analyzed for over 40 pesticides and fewer than one quarter of the samples had detectable levels, all less than one thousandth of FDA's guidelines for these substances. Thus, risk from pesticide residues from Alaska fish is essentially negligible.

Minimizing Contaminant Intake

The best way to ensure the lowest levels of contaminants is to eat fish known to have low levels, such as Alaska-caught fish. These include salmon, cod, and pollock. Vary the types of fish and shellfish you eat to further reduce risk. Cook fish so that the fat drains away, taking with it possible organic contaminants.

Conclusion: Recent analyses confirm that popular Alaska fish—salmon, cod, and pollock—present negligible health risks from mercury and organic contaminants such as PCBs and dioxins. These fish can safely be consumed any time by people of all ages. The well recognized health benefits of consuming fish regularly for heart health, infant development during pregnancy and nursing, immune function, and other conditions far outweigh potential risks from trace levels of contaminants.

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¹ Alaska Dept. Environmental Conservation:
http://www.state.ak.us/dec/eh/docs/vet/FMP_hg_Data.pdf

² Mercury Content of Commercial Fish and shellfish:
<http://www.cfsan.fda.gov/~frf/sea-mehg.html>

³ ToxFaq's for polychlorinated biphenyls (PCBs):
<http://www.atsdr.cdc.gov/tfacts17.html>

⁴ Questions and answers about dioxins:
<http://vm.cfsan.fda.gov/~lrd/dioxinqa.html>

⁵ EPA. Exposure and health assessment for 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) and related compounds. 2000. Washington, DC, USA: NCEA Office of Research and Development, EPA.